

RECEIVED

FEB 25 2000
TECHNOLOGY CENTER 2800

In re Application of

HARAR

Addiction Number

07/337566

Five

4/13/87

GRAND AR UNIT

Examined

Page No.

Assistant Commissioner for Patents
Washington, DC 20231

I hereby request access under 37 CFR 1.14(a)(3)(iv) to the application file record of the above-identified ABANDONED application, which is: (CHECK ONE:

_____ (A) referred to in United States Patent Number 5418752, column _____

____ (B) referred to in an application that is open to public inspection as set forth in 37 CFR 1.11, i.e.,
Application No. _____ filed _____, on page _____ of
paper number _____.

_____ (C) an application that claims the benefit of the filing date of an application that is open to public inspection, i.e., Application No. _____, filed _____, or

— (D) an application in which the applicant has filed an authorization to lay open the complete application to the public.

Please direct any correspondence concerning this request to the following address:

Si Bron

Signature

Signature
Tim Brown

Typed or printed name

2/29/02

DRIE

FOR PTO USE ONLY

Approved by: _____
(Initials)

Unit:

Best Available Copy

United States Patent [19]

Harari et al.

(11) Patent Number: 5,418,752

(45) Date of Patent: May 23, 1995

[54] FLASH EEPROM SYSTEM WITH ERASE SECTOR SELECT

[75] Inventors: Elyahon Harari, Los Gatos; Robert D. Norman, San Jose; Sanjay Mehrotra, Milpitas, all of Calif.

[73] Assignee: Sundisk Corporation, Santa Clara, Calif.

[21] Appl. No.: 963,851

[22] Filed: Oct. 20, 1992

Related U.S. Application Data

[62] Division of Ser. No. 337,566, Apr. 13, 1989, abandoned.

[51] Int. Cl.⁶ G11C 7/00

[52] U.S. Cl. 365/218; 365/185; 365/900

[58] Field of Search 365/185, 218, 900, 230.03

[56] References Cited

U.S. PATENT DOCUMENTS

4,752,871 6/1988 Sparks et al. 365/218 X
4,970,692 11/1990 Ali et al. 365/218

OTHER PUBLICATIONS

R. Wilson, "1-Mbit flash memories seek their role in

system design", Computer Design, Mar. 1, 1989, pp. 30 and 32.

Primary Examiner—Joseph A. Popek
Attorney, Agent or Firm—Majestic, Parsons, Siebert & Howe

[57] ABSTRACT

A system of Flash EEPROM memory chips with controlling circuits such as non-volatile memory such as that provided by magnetic disk drives. Improvements include selective multiple sector erase, in which any combinations of Flash sectors may be erased together. Selective sectors among the selected combination may also be de-selected during the erase operation. Another improvement is the ability to remap and replace defective cells with substitute cells. The remapping is performed automatically as soon as a defective cell is detected. When the number of defects in a Flash sector becomes large, the whole sector is remapped. Yet another improvement is the use of a write cache to reduce the number of writes to the Flash EEPROM memory, thereby minimizing the stress to the device from undergoing too many write/erase cycling.

4 Claims, 5 Drawing Sheets

